Space Weather Forecast

Issued on Monday, 19 February 2024 at 01:23 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of isolated Moderate flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low solar activity with only Common-class flares observed, the strongest at 18/0405UTC from the large sunspot region now over the southwest limb. There has been a general decreasing trend in the strength and frequency of these Common-class flares, with only six relatively simple sunspots on the visible disc. The most notable is the large mature unipolar spot which has rotated onto the northeast disc, which may have more complexity to reveal as it moves to a clearer viewing location. The next most next noteworthy region is nearing the northwest limb, however any growth of this spot appears to have now stalled, perhaps with a weakening trend, although this is hard to assess due to the spots location.

No Earth-directed coronal mass ejections (CMEs) were observed.

Solar Wind / Geomagnetic Activity: Slow wind conditions were observed with solar winds speeds were at ambient background. Interplanetary Magnetic Field (IMF) was generally weak. North-south component of the magnetic field, was predominately negative (southward) and also weak. Only brief positive (northward) spells were observed. Geomagnetic activity was initially Unsettled (Kp3) but eased to be Quiet from 18/0300 (Kp0-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was slightly above background levels but well below the level of an S1 Minor Solar Radiation Storm.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity expected, with a chance of isolated Moderate-class flares, mainly from the new sunspot on the northeast disc.

Solar Wind / Geomagnetic Activity: Recent CMEs are expected to either miss or only have very minimal impact on Earth, with the most likely for an Earth-directed component being the eruption from the north-disc on 16 Feb, passing near Earth day 1-2 (late 19 Feb or early 20 Feb). No other significant solar wind enhancements feature in the period with mainly background winds expected. Geomagnetic activity is expected to be mostly Quiet, but with a chance of becoming Unsettled with Active intervals with any CME arrival day 1-2 (19-20 Feb). Any visible aurora is likely remain at high latitudes, with only a slight chance of becoming visible from the far north of the UK.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to continue easing to background levels. However, there is a slight chance further enhancements due to any further significant eruptions that occur from the large sunspot that is now over the southwest horizon.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	5	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	1	1
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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